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EXAMINER	
ZERVIGON, RUDY	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/039,357	PARK ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-22* is/are pending in the application.

4a) Of the above claim(s) *17-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-16,21 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.8, and 10-13

2. Claims 1, 3-7, 9, 14-16, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore; Gary M. et al. (US 5,710,407 A) in view of Voll; Manfred et al (US 4,439,401 A). Moore teaches an apparatus (Figure 3C; column 11, line 51 - column 12, line 38) for forming a thin film, comprising: a reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38) having a top portion (301c; Figure 3C), a sidewall portion (301; Figure 3C) and a bottom portion (not labeled; Figure 12); a gas injector (354a; Figure 3C) penetrating the top portion (301c; Figure 3C) and letting a source element pass therethrough, and a substrate heating member (307; Figure 3C) positioned in the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38) – claim 1, 22

Moore further teaches:

i. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 1, further comprising a ram (304; Figure 3C) that is mounted through the bottom portion (not labeled; Figure 12) of the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38) to support the substrate heating member (307; Figure 3C) – as claimed by claim 2

ii. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 1, wherein the substrate heating member (307; Figure 3C) is positioned at the center of the reaction space and the gas injector (354a; Figure 3C) is disposed at the center of the top portion

(301c; Figure 3C) of the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38), as claimed by claim 7

iii. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 8, wherein the source element includes a primary reactant element and a secondary reactant element, as claimed by claim 9 – Applicant's claim 9 requirement amounts to an intended use claim requirement of the pending apparatus claims. It is well established that apparatus claims must be structurally distinguished from the prior art (In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ."(emphasis in original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP – 2114). Further, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Exparte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

iv. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 1, wherein the top portion (301c; Figure 3C) of the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38) has a dome shape, as claimed by claim 15

v. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 1, wherein the substrate heating member (307; Figure 3C) includes a heating element (307; Figure 3c; column 11, lines 51-69), as claimed by claim 16

vi. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 1, wherein the sidewall portion (301; Figure 3C) of the reaction chamber (Figure 3C; column 11,

line 51 - column 12, line 38) includes the substrate inlet/outlet (313; Figure 3C) through which a substrate transfers in and out of the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38), and wherein the bottom portion (301a; Figure 3C) of the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38) includes a gas exhaust port (309b; Figure 3C) that emits air from the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38), as claimed by claim 21

vii. An apparatus (Figure 3C; column 11, line 51 - column 12, line 38) for forming a thin film, comprising: a reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38) having a top portion (301C; Figure 3C), a sidewall portion (301; Figure 3C) and a bottom portion (301a; Figure 3C); a gas injector (354a; Figure 3C) penetrating the top portion (301C; Figure 3C) and letting a source element pass therethrough – claim 22

Moore does not teach:

viii. a distributor including a first external surface having a cylindrical shape, a second external surface having a frustroconical shape, and a plurality of injection holes formed in the distributor and the source element is injected through the plurality of injection holes – claim 1

ix. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 1, wherein the plurality of injection holes are arranged on the second external surface of the distributor, as claimed by claim 4

x. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 4, wherein each injection hole includes a large diameter part accepting the source element and a

small diameter part in which the velocity of source element increases, as claimed by claim 5

xi. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 5, wherein the large diameter part has a large diameter rather than the small diameter part, as claimed by claim 6

xii. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 1, wherein the number of and the size of the injection holes vary depending on the reaction space of the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38), as claimed by clam 14

xiii. a distributor connected to the gas injector (354a; Figure 3C), the distributor comprising a first external portion having a cylindrical shape, a second external portion having a frustroconical shape, and a plurality of injection holes formed in the second portion, each injection hole defining an interface to the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38), wherein the source element is injected into the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38) through the plurality of injection holes – claim 22

Voll teaches:

xiv. a fluid distributor (Figure 4) including a first external surface (2; Figure 4) having a cylindrical shape, a second external surface (surface of 3; Figure 4) having a frustroconical shape, and a plurality of injection holes (3; Figure 4) formed in the fluid distributor (Figure 4) and the source element is injected through the plurality of injection holes (3; Figure 4) – claim 1

xv. the plurality of injection holes (3; Figure 4) are arranged on the second external surface (surface of 3; Figure 4) of the fluid distributor (Figure 4), as claimed by claim 4

xvi. a fluid distributor (Figure 4) connected to the gas injector (354a; Figure 3C), the fluid distributor (Figure 4) comprising a first external portion (2; Figure 4) having a cylindrical shape, a second external portion (surface of 3; Figure 4) having a frustroconical shape, and a plurality of injection holes (3; Figure 4) formed in the second portion, each injection hole defining an interface to the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38), wherein the source element is injected into the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38) through the plurality of injection holes (3; Figure 4) – claim 22

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Moore's distributor (354b; Fig. 3C) with Voll's distributor (Figure 4), including optimizing the size and number of Voll's injection holes.

Motivation to replace Moore's distributor (354b; Fig. 3C) with Voll's distributor (Figure 4), including optimizing the size and number of Voll's injection holes is for reactant gas mixing as taught by Voll (column 3, lines 40-55) and for optimal flow characteristics (column 3; lines 23-31). Further , it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

3. Claims 8, and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore; Gary M. et al. (US 5,710,407 A) and Voll; Manfred et al (US 4,439,401 A) in view of Li; Shijian et al. (US 5,772,771 A). Moore and Voll are discussed above. Moore and Voll do not teach:

i. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 1, further comprising a plurality of distributors that are classified into a first distributor (Figure 4) at the center of the top portion (301c; Figure 3C) and a second distributor (Figure 4) around the first distributor (Figure 4) in the top portion (301c; Figure 3C) so as to inject the source element, as claimed by claim 8

ii. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 9, wherein the primary reactant element passes through the first distributor (Figure 4) arranged at the center of the top portion (301c; Figure 3C) and the secondary reactant element passes through the second distributor (Figure 4) arranged around the first distributor (Figure 4), as claimed by claim 10

iii. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 10, wherein an axis of the second distributor (Figure 4) forms an angle of about 90 degrees with an axis of the first distributor (Figure 4) when the first and second distributors are disposed at the top portion (301c; Figure 3C) of the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38), as claimed by claim 11

iv. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 10, wherein an axis of the second distributor (Figure 4) forms an angle of less than 90 degrees with an axis of the first distributor (Figure 4) when the first and second distributors are disposed

at the top portion (301c; Figure 3C) of the reaction chamber (Figure 3C; column 11, line 51 - column 12, line 38), as claimed b claim 12

v. The apparatus (Figure 3C; column 11, line 51 - column 12, line 38) of claim 10, wherein the secondary reactant element is selected from a group consisting of ammonia, hydrazine, water vapor, oxygen and ozone, as claimed by claim 13 – Applicant's claim 13 requirement amounts to an intended use claim requirement of the pending apparatus claims. It is well established that apparatus claims must be structurally distinguished from the prior art (In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ."(emphasis in original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP – 2114). Further, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Exparte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Li teaches a plurality of distributors (56, 34; Figure 1) including:

vi. The apparatus (Figure 1) of claim 1, further comprising a plurality of distributors (56, 34; Figure 1) that are classified into a first distributor (56; Figure 1) at the center of the top portion (301c; Figure 3C) and a second distributor (34; Figure 1) around the first distributor (56; Figure 1) in the top portion (25; Figure 1) so as to inject the source element, as claimed by claim 8

vii. The apparatus (Figure 1) of claim 9, wherein the primary reactant element passes through the first distributor (56; Figure 1) arranged at the center of the top portion (25; Figure 1)

and the secondary reactant element passes through the second distributor (34; Figure 1) arranged around the first distributor (56; Figure 1), as claimed by claim 10

viii. The apparatus (Figure 1) of claim 10, wherein the secondary reactant element is selected from a group consisting of ammonia, hydrazine, water vapor, oxygen and ozone, as claimed by claim 13 – Applicant's claim 13 requirement amounts to an intended use claim requirement of the pending apparatus claims. It is well established that apparatus claims must be structurally distinguished from the prior art (In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ."(emphasis in original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP – 2114). Further, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Exparte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add plural Voll distributers to Moore's apparatus as taught by Li.

Motivation to add plural Voll distributers to Moore's apparatus as taught by Li is for film deposition uniformity as taught by Li (abstract). Further, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

Response to Arguments

4. Applicant's arguments with respect to claims 1, 2, 4-16, and 21-22 have been considered but are moot in view of the new grounds of rejection.

Conclusion

5. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (571) 272-1439.